

*Conservation Assessment  
for  
(Cetraria aurescens) Tuck.*



*Photo: Stephen Sharnoff*

***USDA FOREST SERVICE, EASTERN REGION***  
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*This Conservation Assessment was prepared to compile the published and unpublished information on the subject taxon or community; or this document was prepared by another organization and provides information to serve as a Conservation Assessment for the Eastern Region of the Forest Service. It does not represent a management decision by the U.S. Forest Service. Though the best scientific information available was used and subject experts were consulted in preparation of this document, it is expected that new information will arise. In the spirit of continuous learning and adaptive management, if you have information that will assist in conserving the subject taxon, please contact the Eastern Region of the Forest Service - Threatened and Endangered Species Program at 310 Wisconsin Avenue, Suite 580 Milwaukee, Wisconsin 53203.*

## Table Of Contents

<b>EXECUTIVE SUMMARY .....</b>	<b>4</b>
<b>ACKNOWLEDGEMENTS .....</b>	<b>4</b>
<b>INTRODUCTION.....</b>	<b>4</b>
<b>NOMENCLATURE AND TAXONOMY.....</b>	<b>4</b>
<b>DESCRIPTION OF SPECIES.....</b>	<b>5</b>
<b>LIFE HISTORY .....</b>	<b>5</b>
<b>HABITAT .....</b>	<b>5</b>
<b>DISTRIBUTION AND ABUNDANCE.....</b>	<b>6</b>
<b>RANGEWIDE STATUS .....</b>	<b>6</b>
<b>POPULATION BIOLOGY AND VIABILITY.....</b>	<b>6</b>
<b>POTENTIAL THREATS.....</b>	<b>6</b>
<b>SUMMARY OF LAND OWNERSHIP AND EXISTING HABITAT PROTECTION.....</b>	<b>7</b>
<b>RESEARCH AND MONITORING .....</b>	<b>7</b>
<b>REFERENCES.....</b>	<b>8</b>
<b>LIST OF CONTACTS.....</b>	<b>9</b>
<b>APPENDICES .....</b>	<b>10</b>

## EXECUTIVE SUMMARY

*Cetraria aurescens* Tuck. is designated as a Regional Forester Sensitive Species on the Superior National Forest in the Eastern Region of the Forest Service. The species occurrence is documented but not listed on the Hiawatha, Huron-Manistee, and Ottawa National Forests. The purpose of this document is to provide the background information necessary to prepare Conservation Approaches and a Conservation Strategy that will include management actions to conserve the species.

This conservation assessment provides available information on *Cetraria aurescens* Tuck. and its distribution, habitat, range, status, life history, and ecology. *Cetraria aurescens* grows in old-growth temperate forests and usually is found on conifers or hardwoods in the southern part of its range. It is a species endemic to North America with an Appalachian-Great Lakes distribution. It does not occur in Europe. In the Great Lakes area common habitat for this species is moist sites in bogs or near water. Threats to *Cetraria aurescens* are logging, blowdowns, and roads that damage the old-growth habitat.

## ACKNOWLEDGEMENTS

Appreciation is extended to the curators of the herbaria for help in obtaining label data for collections of rare lichens and to Dr. James Bennett for assistance. Regional USFS personnel also provided maps and assistance in obtaining data for their forests and are thanked for their help.

## INTRODUCTION

For this document a search was made of the printed literature, Internet (W-1), and other literature thought to have pertinent information. Distribution and ecological information was gathered along with range-wide status and threats. All collections of the species found in the University of Michigan Herbarium (MICH), University of Minnesota Herbarium (MIN), Michigan State University Herbarium (MSC), and University of Wisconsin Herbarium (WIS) were located and the labels copied and entered into species databases. From these records ecological information, land ownership, and distribution maps were prepared for the area covered in this report. The draft reports were then sent to reviewers for comments and additions.

Most lichens do not have common names that are widely known, although some attempts have been made to create them (Brodo et al. 2001). For most species there is little known about the detailed ecology and the historical distributions of these lichens but some data could be derived from the herbarium collections.

## NOMENCLATURE AND TAXONOMY

<b>Family:</b>	Parmeliaceae
<b>Scientific name:</b>	<i>Cetraria aurescens</i> Tuck.
<b>Common name:</b>	none
<b>USDA plant code:</b>	AHAU
<b>Synonyms:</b>	<i>Ahtiana aurescens</i> (Tuck.) Thell & Randlane <i>Tuckermannopsis aurescens</i> (Tuck.) Hale

This species was placed in a new segregate genus *Ahtiana* but this placement is not followed by many lichenologists in North America and Europe although it is recognized in Esslinger & Egan (1995) and Brodo et al. (2001).

## DESCRIPTION OF SPECIES

“Thallus light yellowish green, adnate, 2-6 cm broad; upper surface somewhat ridged (without lines); lower surface light tan, sparsely rhizinate; apothecia and pycnidia common” (Hale 1979). The moderate sized thallus with a slight yellowish green color and lacking soredia and isidia is characteristic along with the numerous marginal apothecia. It might be confused with *Cetraria americana* but that species is greenish brown and has no yellow tinge. See color photo # 96 in Brodo et. al. (2001).

## LIFE HISTORY

**Reproduction:** This lichen reproduces sexually only by spores. It usually has abundant apothecia but no asexual propagules.

**Ecology :** This lichen grows on trunks and branches of trees and bushes. It is usually found in humid places in old-growth forests.

**Dispersal :** This lichen disperses only by spores so its dispersal range is greater than those species that disperse by asexual means.

**Obligate Associations :** NA

## HABITAT

**Range-wide :** This species occurs in old-growth temperate forests and usually grows on pine, on white cedar, and occasionally on hardwoods in the southern Appalachians (Thell et al. 1995). In our region it is usually found in moist habitats, such as white cedar or black spruce swamps over 100 years old (Wetmore 2001).

**National Forests :** In the Upper Great Lakes area this lichen is sporadic but never abundant at any one locality. In northern Minnesota it is restricted to moist habitats near bogs or water in areas of old-growth forest without disturbance, especially white cedar swamps over 100 years old (Wetmore 2001). In our region this species seems to require old-growth, moist habitats. There is no information available about its sensitivity to air pollution but this is probably not a factor in our region. The most likely cause of its decline is the extensive logging in the early 20<sup>th</sup> century.

**Site Specific :** In a habitat study in Superior National Forest (Wetmore 2001) this species was found in forest stands with <10%-80% overstory and on trees ranging in age from 118-266 years. These localities were usually white cedar swamps or black spruce bogs. In Michigan this species has been reported growing in mesic sugar maple-yellow birch-hemlock forests and can occur in black ash swamps.

## DISTRIBUTION AND ABUNDANCE

**Range-wide Distribution:** This species is endemic to eastern North America and has an Appalachian-Great Lakes distribution (Thell et al. 1995). It is common at lower elevations in the southern Appalachians (Dey 1978), and Degelius (1940) reported this species to be “abundant on branches of *Pinus strobus*” in one locality in Maine. However, in the northern and western parts of its range it is infrequent to rare (Wong & Brodo 1992)

**Region-wide Distribution:** In the upper Great Lakes this species is infrequent. Harris (1978) and Fryday et. al. (2001) say it is rare in northern Lower Peninsula and Upper Peninsula of Michigan. In Minnesota it is rare (Fink 1910, Wetmore 1981, 2001) (see Appendix 1). In this region before 1970 it was known from 17 localities and after 1970 it has been collected at 17 additional localities.

**Population Trends:** Range-wide there is no indication of population changes. Region-wide there might be a slight decrease in the abundance of this species compared to historical times. Because this species occurs primarily in moist old-growth forests, the decrease could be due to the extensive logging at the beginning of the 20<sup>th</sup> century.

## RANGEWIDE STATUS

This species is not listed outside of North America. For definitions of ranks see Appendix 4.

<b>U. S. Fish and Wildlife Rank:</b>	Not ranked
<b>Global Heritage Status Rank :</b>	Not ranked
<b>U. S. National Heritage Rank :</b>	Not ranked
<b>US Forest Service, R9 Sensitive Species:</b>	Sensitive on Superior National Forest. See Appendix 2.
<b>Michigan Rank :</b>	Not ranked
<b>Minnesota Rank :</b>	Special Concern
<b>Wisconsin Rank :</b>	Not ranked
<b>Ontario, Canada Rank :</b>	Not ranked

This species seems to be reasonably secure. It is unknown whether the species still occurs in the historical localities. Past logging or drainage of wetlands probably eliminated it from some historical localities but it has been found at new localities.

## POPULATION BIOLOGY AND VIABILITY

Because this species reproduces by small spores, it has a fairly good dispersal ability. The limiting factor may be the availability of old-growth undisturbed habitats. The number of populations has not changed significantly in the past hundred years in our region. The fact that it is at the edge of its range here does indicate that its survival should be of concern in our area.

## POTENTIAL THREATS

In the Appalachian part of its range and on Isle Royale this species is not threatened but in the Lakes States region in localities where *Cetraria aurescens* is found, there are only a few

individuals. Any activity that reduces humidity or disturbs the old-growth forest could be a threat to its survival there. On the Superior, Ottawa, and Hiawatha National Forests the known sites should be considered for protection.

**Present or Threatened Risks to Habitat :** This lichen grows in areas with high humidity in old-growth forests. Logging or road construction in the old black spruce or *Thuja* bogs would be a threat because of actual loss of the old trees and also because of humidity changes.

**Overutilization :** NA

**Disease or Predation :** NA

**Inadequacy of Existing Regulatory Mechanisms :** Michigan and Wisconsin do not have official lists of protected lichens and are not monitoring them.

**Other Natural or Human Factors :** Major windstorms or fires that destroy these old forests would reduce the high humidity this lichen requires.

## **SUMMARY OF LAND OWNERSHIP AND EXISTING HABITAT PROTECTION**

Twenty four of the 34 known localities of this species are in areas under state or federal ownership but may not be specifically protected. See data base table for known localities in Appendix 3.

## **RESEARCH AND MONITORING**

**Existing Surveys, Monitoring, and Research :** A survey was made in Superior National Forest in 1999 to look for localities with rare lichens (Wetmore 2000) . This species was found at four new localities during this survey.

Another survey was made in 2000 to characterize the habitats of three of the rare species in Superior National Forest (Wetmore 2001). This species was one of those included.

In addition two pre-timber sales surveys have been made to look for rare species but this species was not found.

**Survey Protocol :** Likely sites in the 1999 survey were chosen using USFS vegetation maps followed by low-level aerial flights to look for likely habitats. Ground checking was then done and total collections were made at interesting localities.

In the 2000 survey as many of the known localities as possible were revisited with a forest ecologist to describe the vegetation of the sites. Seven sites where this lichen occurs were studied.

In the pre-timber sales surveys a lichenologists walked through parts of the sales area looking for rare lichens.

**Research Priorities** : The historical localities where this was found should be checked for population viability and new sites should be searched for. More detailed ecology should be obtained from localities in other National Forests in this region.

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## INTERNET SOURCES

- W-1 Recent Literature on Lichens - [http://www.toyen.uio.no/botanisk/bot-mus/lav/sok\\_rll.htm](http://www.toyen.uio.no/botanisk/bot-mus/lav/sok_rll.htm)
- W-2 Plant name database: [http://plants.usda.gov/cgi\\_bin/topics.cgi](http://plants.usda.gov/cgi_bin/topics.cgi)



## LIST OF CONTACTS

### Information Requests:

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Hiawatha National Forest, Michigan: Jan Schultz (Forest Plant Ecologist) (906) 228-8491 [jschultz@fs.fed.us](mailto:jschultz@fs.fed.us)

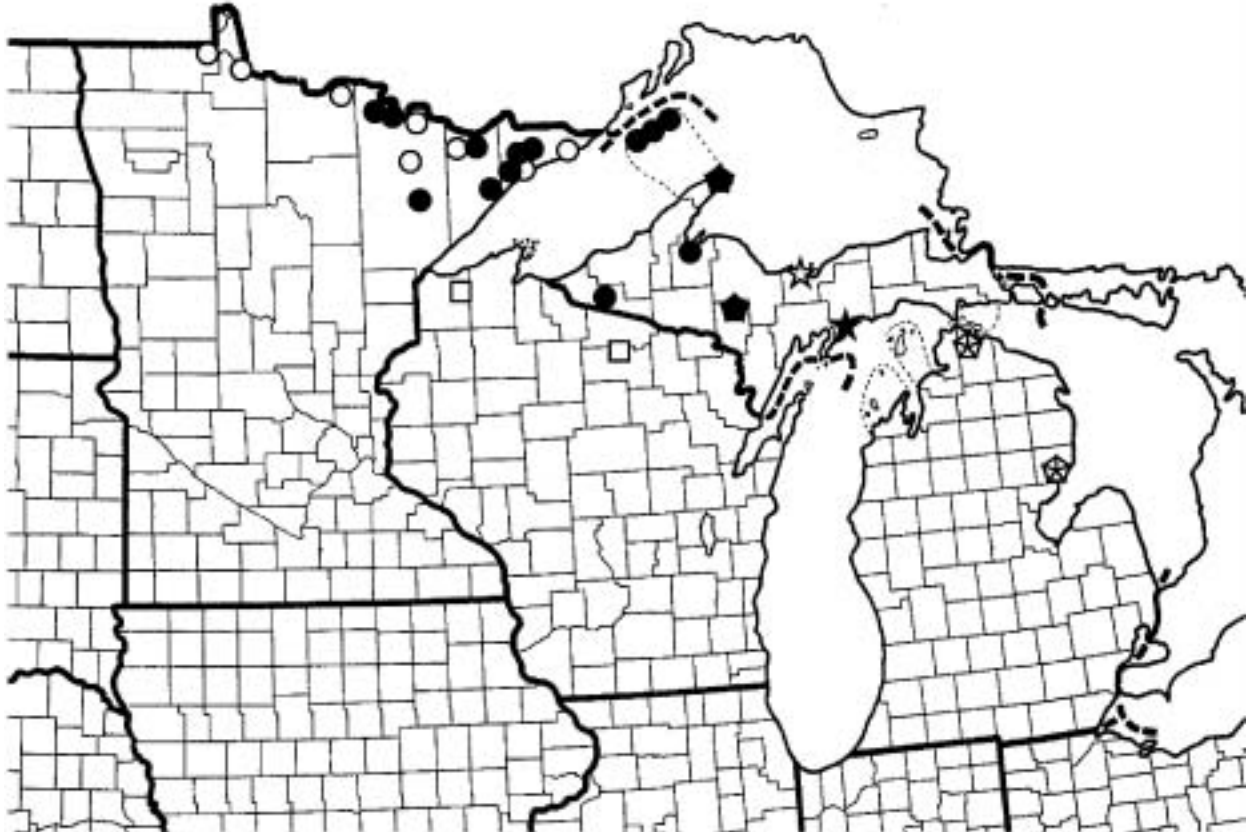
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## APPENDICES

### APPENDIX 1 Distribution of *Cetraria aurescens*



#### *Cetraria aurescens*

- ☆ = MICH herbarium specimens before 1970
- ★ = MICH herbarium specimens after 1970
- = MIN herbarium specimens before 1970
- = MIN herbarium specimens after 1970
- ☆ = MSC herbarium specimens before 1970
- ★ = MSC herbarium specimens after 1970
- = WIS herbarium specimens before 1970
- = WIS herbarium specimens after 1970

## APPENDIX 2 Lichens of conservation concern on the Lakes States National Forests

Scientific Name	CN	CP	HI	HM	OT	SU
<i>Arctoparmelia centrifuga</i>						(X)
<i>Caloplaca parvula</i>						X
<b><i>Cetraria aurescens</i></b>			(X)	(X)	(X)	X
<i>Cetraria oakesiana</i>			(X)	(X)	(X)	X
<i>Cladonia wainioi</i>						X
<i>Lobaria quercizans</i>	(X)		(X)	(X)	(X)	X
<i>Peltigera venosa</i>						X
<i>Pseudocyphellaria crocata</i>						X
<i>Ramalina thrausta</i>						(X)
<i>Sticta fuliginosa</i>						X
<i>Usnea longissima</i>					(X)	X

X = present in the forest and listed as sensitive

(X)= present in the forest but not listed as sensitive

### National Forest Codes

<b>CN</b>	Chequamegon/Nicolet
<b>CP</b>	Chippewa
<b>HI</b>	Hiawatha
<b>HM</b>	Huron/Manistee
<b>OT</b>	Ottawa
<b>SU</b>	Superior

## APPENDIX 3 Locality data of *Cetraria aurescens*

Area	State	County	Locality	Year
	MN	Lake of the Woods	Mainland	1901
	MI	Keweenaw	S of Copper Harbor	1976
	MN	Roseau	Warroad	1901
	MN	St. Louis	Harding	1901
	MI	Cheboygan	Reeses Bog, N Burt Lake	1967
	WI	Oneida	Woodruff	1946
	MN	Koochiching	Koochiching	1901
	MN	St. Louis	Tower	1901
	MN	Cook	Grand Marais	1902
	MN	Lake of the Woods	Baudette	1901
Brule River SF	WI	Douglas	Upper Brule River	1942
Hiawatha NF	MI	Alger	Au Train, Au Train Lake	1933
Huron NF	MI	Iosco	Au Sable River NW Tawas City	1969
Isle Royale NP	MI	Keweenaw	Rainbow Cove, E of	1984
Isle Royale NP	MI	Keweenaw	Siskiwit Swamp, Big Siskiwit R.	1959
Isle Royale NP	MI	Keweenaw	Middle Point SE of Wash. Isl.	1984
Isle Royale NP	MI	Keweenaw	Hay Bay swamp	1930
Isle Royale NP	MI	Keweenaw	Spruce Point	1983

<i>Area</i>	<i>State</i>	<i>County</i>	<i>Locality</i>	<i>Year</i>
Mackinac SF	MI	Mackinac	NNW of Big Knob	1977
Ottawa NF	MI	Gogebic	Marenisco, 2 mi SE	1975
Ottawa NF	MI	Baraga	Sturgeon River CG, 5 mi NE Sidnaw	1972
Sturgeon R. SF	MI	Dickinson	O'Neil Lake CG	1971
Superior NF	MN	Cook	Tofte, Carlton Peak	1897
Superior NF	MN	Lake	Snowbank Lake area	1897
Superior NF	MN	Lake	Moose Lake, E shore	1986
Superior NF	MN	St. Louis	Hoyt Lakes, 6 mi S	1977
Superior NF	MN	St. Louis	Babbitt, 5 mi E	1977
Superior NF	MN	Cook	S of Sawbill Camp	1999
Superior NF	MN	Lake	Wanless Creek	1999
Superior NF	MN	Cook	E of Tait Lake	1999
Superior NF	MN	Cook	S of Ball Club Lake	1999
Voyageurs NP	MN	St. Louis	Daley Brook Swamp	1978
Voyageurs NP	MN	St. Louis	Kettle Falls	1901
Voyageurs NP	MN	St. Louis	Blind Ash Bay, W of	1978

*Count* = : 34

## APPENDIX 4 Definitions of Ranks

### Definitions of Global Heritage Ranks

**G3: Vulnerable**—Vulnerable globally either because very rare and local throughout its range, found only in a restricted range (even if abundant at some locations), or because of other factors making it vulnerable to extinction or elimination. Typically 21 to 100 occurrences or between 3,000 and 10,000 individuals.

**G4: Apparently Secure**—Uncommon but not rare (although it may be rare in parts of its range, particularly on the periphery), and usually widespread. Apparently not vulnerable in most of its range, but possibly cause for long-term concern. Typically more than 100 occurrences and more than 10,000 individuals.

**G5: Secure**—Common, widespread, and abundant (although it may be rare in parts of its range, particularly on the periphery). Not vulnerable in most of its range. Typically with considerably more than 100 occurrences and more than 10,000 individuals.

### Definitions of National and Subnational Heritage Ranks

**N2, S2: Imperiled**—Imperiled in the nation or subnation because of rarity or because of some factor(s) making it very vulnerable to extirpation from the nation or subnation. Typically 6 to 20 occurrences or few remaining individuals (1,000 to 3,000).

**N3, S3: Vulnerable**—Vulnerable in the nation or subnation either because rare and uncommon, or found only in a restricted range (even if abundant at some locations), or because of other factors making it vulnerable to extirpation. Typically 21 to 100 occurrences or between 3,000 and 10,000 individuals.

**N4, S4: Apparently Secure**—Uncommon but not rare, and usually widespread in the nation or subnation. Possible cause of long-term concern. Usually more than 100 occurrences and more than 10,000 individuals.

**N5, S5: Secure**—Common, widespread, and abundant in the nation or subnation. Essentially ineradicable under present conditions. Typically with considerably more than 100 occurrences and more than 10,000 individuals.

**N?, S?: Unranked**—Nation or subnation rank not yet assessed.

## Minnesota Ranks

**Endangered:** A species is considered endangered if the species is threatened with extinction throughout all or a significant portion of its range within Minnesota.

**Threatened:** A species is considered threatened if the species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range within Minnesota.

**Special Concern:** A species is considered a species of special concern if, although the species is not endangered or threatened, it is extremely uncommon in Minnesota, or has unique or highly specific habitat requirements and deserves careful monitoring of its status. Species on the periphery of their range that are not listed as threatened may be included in this category along with those species that were once threatened or endangered but now have increasing or protected, stable populations.

**Regional USDA Forest Service Ranks** (USDA Forest Service. 1995. Forest Service Manual 2670.5. Washington, D.C.)

**Sensitive Species:** Those plant and animal species identified by a Regional Forester for which population viability is a concern, as evidenced by:

- a. Significant current or predicted downward trends in population numbers or density.
- b. Significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution.